

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-2. (canceled)

3. (currently amended) An anomaly diagnosis system provided in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the anomaly diagnosis system comprising:

warming-up means for executing warming-up of at least one of the engine and the component;

pre-start state detecting means for detecting a pre-start state by detecting a preparation operation for a start of the engine, wherein the warming-up means executes the warming-up prior to the start of the engine when the pre-start state detecting means detects the pre-start state;

anomaly detecting means for detecting an anomaly of the pre-start state detecting means; and

vehicle state detecting means for detecting a vehicle state, wherein the pre-start state detecting means detects the pre-start state based on a given signal.

the anomaly detecting means detects the anomaly of the pre-start state detecting means based on the given signal and the vehicle state detected by the vehicle state detecting means, and

The anomaly diagnosis system of Claim 2, wherein

the pre-start state detecting means detects the pre-start state based on an ON-signal or an OFF-signal of a driver seat switch as the given signal, wherein the ON-signal or OFF-signal of the driver seat switch indicates whether a driver is seated on a driver seat or not, respectively.

4. (previously presented) The anomaly diagnosis system of Claim 3, wherein, when the ON-signal of the driver seat switch is not detected and at least one of eight conditions included in the vehicle state detected by the vehicle state detecting means is satisfied, the anomaly detecting means detects an anomaly of the pre-start state detecting means, wherein:

a first condition of the eight conditions is that a vehicle speed is greater than or equal to a given speed;

a second condition of the eight conditions is that an engine rotation speed is greater than or equal to a given speed;

a third condition of the eight conditions is that an amount of air that is sucked into the engine is greater than or equal to a given amount;

a fourth condition of the eight conditions is that a pressure detected by a suction pressure sensor provided in an exhaust path is greater than or equal to a given pressure;

a fifth condition of the eight conditions is that an opening degree of an accelerator is greater than or equal to a given degree;

a sixth condition of the eight conditions is that an opening degree of a throttle is

greater than or equal to a given degree;

a seventh condition of the eight conditions is that a deceleration is greater than or equal to a given amount; and

an eighth condition of the eight conditions is that an depression of a clutch pedal is greater than or equal to a given amount.

5. (previously presented) The anomaly diagnosis system of Claim 3,

wherein, in a case where the OFF-signal of the driver seat switch is not detected and when it is detected that the driver retires from the vehicle, the anomaly detecting means detects an anomaly of the pre-start state detecting means.

6. (canceled)

7. (currently amended) An anomaly diagnosis system provided in a vehicle

having an internal combustion engine and a component having an operative relationship with the engine, the anomaly diagnosis system comprising:

warming-up means for executing warming-up of at least one of the engine and the component;

pre-start state detecting means for detecting a pre-start state by detecting a preparation operation for a start of the engine, wherein the warming-up means executes the warming-up prior to the start of the engine when the pre-start state detecting means detects the pre-start state;

anomaly detecting means for detecting an anomaly of the pre-start state detecting means; and

vehicle state detecting means for detecting a vehicle state,
wherein the pre-start state detecting means detects the pre-start state based on a
given signal, and

the anomaly detecting means detects the anomaly of the pre-start state detecting means based on the given signal and the vehicle state detected by the vehicle state detecting means,

the pre-start state detecting means detects the pre-start state based on an ON-signal or an OFF-signal of an ignition key insertion switch as the given signal, wherein the ON-signal or OFF-signal of the ignition key insertion switch indicates whether an ignition key is inserted or not, respectively,

The anomaly diagnosis system of Claim 6, wherein,
when the ON-signal of the ignition key insertion switch is not detected and at least one of ten conditions included in the vehicle state detected by the vehicle state detecting means is satisfied, the anomaly detecting means detects an anomaly of the pre-start state detecting means, wherein:

a first condition of the ten conditions is that a vehicle speed is greater than or equal to a given speed;

a second condition of the ten conditions is that an engine rotation speed is greater than or equal to a given speed;

a third condition of the ten conditions is that an amount of air that is sucked into

the engine is greater than or equal to a given amount;

a fourth condition of the ten conditions is that a pressure detected by a suction pressure sensor provided in an exhaust path is greater than or equal to a given pressure;

a fifth condition of the ten conditions is that an opening degree of an accelerator is greater than or equal to a given degree;

a sixth condition of the ten conditions is that an opening degree of a throttle is greater than or equal to a given degree;

a seventh condition of the ten conditions is that an amount of stepping of a brake pedal is greater than or equal to a given amount;

an eighth condition of the ten conditions is that an amount of stepping of a clutch pedal is greater than or equal to a given amount;

a ninth condition of the ten conditions is that the ignition key is positioned at an ON position; and

a tenth condition of the ten conditions is that the ignition key is positioned at a START position.

8. (currently amended) An anomaly diagnosis system provided in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the anomaly diagnosis system comprising:

warming-up means for executing warming-up of at least one of the engine and the component;

pre-start state detecting means for detecting a pre-start state by detecting a

preparation operation for a start of the engine, wherein the warming-up means executes the warming-up prior to the start of the engine when the pre-start state detecting means detects the pre-start state;

anomaly detecting means for detecting an anomaly of the pre-start state detecting means; and

vehicle state detecting means for detecting a vehicle state,

wherein the pre-start state detecting means detects the pre-start state based on a given signal, and

the anomaly detecting means detects the anomaly of the pre-start state detecting means based on the given signal and the vehicle state detected by the vehicle state detecting means;

The anomaly diagnosis system of Claim 2, wherein

the pre-start state detecting means detects the pre-start state based on a door opening/closing switch signal as the given signal, wherein the door opening/closing switch signal indicates whether a door of the vehicle is open or closed.

9. (previously presented) The anomaly diagnosis system of Claim 8, wherein a state of a door-handle manipulation switch is detected by the vehicle state detecting means, and

wherein, when the pre-start state is not detected based on the door opening/closing switch signal for a given period including a given time at which a door-handle is operated based on the state of the door-handle manipulation switch, the

anomaly detecting means detects an anomaly of the pre-start state detecting means.

10. (currently amended) An anomaly diagnosis system provided in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the anomaly diagnosis system comprising:

warming-up means for executing warming-up of at least one of the engine and the component;

pre-start state detecting means for detecting a pre-start state by detecting a preparation operation for a start of the engine, wherein the warming-up means executes the warming-up prior to the start of the engine when the pre-start state detecting means detects the pre-start state;

anomaly detecting means for detecting an anomaly of the pre-start state detecting means; and

vehicle state detecting means for detecting a vehicle state,

wherein the pre-start state detecting means detects the pre-start state based on a given signal,

the anomaly detecting means detects the anomaly of the pre-start state detecting means based on the given signal and the vehicle state detected by the vehicle state detecting means,

The anomaly diagnosis system of Claim 2, wherein

the pre-start state detecting means detects the pre-start state based on a door-handle manipulation switch signal as the given signal, wherein the door-handle

manipulation switch signal indicates an operation state of a door-handle of the vehicle.

11. (previously presented) The anomaly diagnosis system of Claim 10, wherein a state of a door opening/closing switch is detected by the vehicle state detecting means, and

wherein, when the pre-start state is not detected based on the door-handle switch signal for a given period including a given time at which the door is operated based on the state of the door opening/closing switch, the anomaly detecting means detects an anomaly of the pre-start state detecting means.

12. (previously presented) An anomaly diagnosis system provided in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the anomaly diagnosis system comprising:

warming-up means for executing warming-up of at least one of the engine and the component;

pre-start state detecting means for detecting a pre-start state by detecting a preparation operation for a start of the engine, wherein the warming-up means executes the warming-up prior to the start of the engine when the pre-start state detecting means detects the pre-start state; and

anomaly detecting means for detecting an anomaly of the pre-start state detecting means;

wherein, when the anomaly of the pre-start state detecting means continues for

more than a given period, the anomaly detecting means diagnoses the pre-start state detecting means with a final anomaly.

13. (previously presented) An anomaly diagnosis system provided in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the anomaly diagnosis system comprising:

warming-up means for executing warming-up of at least one of the engine and the component;

pre-start state detecting means for detecting a pre-start state by detecting a preparation operation for a start of the engine, wherein the warming-up means executes the warming-up prior to the start of the engine when the pre-start state detecting means detects the pre-start state; and

anomaly detecting means for detecting an anomaly of the pre-start state detecting means;

wherein the anomaly detecting means continuously increments a counter while the anomaly of the pre-start state detecting means is being detected, and

wherein, when the counter exceeds a given count, the anomaly detecting means diagnoses the pre-start state detecting means with a final anomaly.

14.-16. (canceled)

17. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;
detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and
detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state, and

The method of Claim 16, wherein

the pre-start state detector detects the pre-start state based on an ON-signal or an OFF-signal of a driver seat switch as the given signal, wherein the ON-signal or OFF-signal of the driver seat switch indicates whether a driver is seated on a driver seat or not, respectively.

18. (previously presented)The method of Claim 17,
wherein, in a case where the OFF-signal of the driver seat switch is not detected and when it is detected that the driver retires from the vehicle, an anomaly of the pre-start

state detector is detected.

19. (canceled)

20. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;

detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and

detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state, and

The method of Claim 16, wherein

the pre-start state detector detects the pre-start state based on a door opening/closing switch signal as the given signal, wherein the door opening/closing switch signal indicates whether a door of the vehicle is open or closed.

21. (previously presented) The method of Claim 20,
wherein a state of a door-handle manipulation switch is detected, and
wherein, when the pre-start state is not detected based on the door
opening/closing switch signal for a given period including a given time at which a door-
handle is operated based on the state of the door-handle manipulation switch, the
anomaly of the pre-start state detector is detected.

22. (currently amended) A method of diagnosing an anomaly in a vehicle
having an internal combustion engine and a component having an operative relationship
with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;
detecting, with a pre-start state detector, a pre-start state by detecting a
preparation operation for a start of the engine, wherein the warm-up is executed prior to
the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and
detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given
signal.

the anomaly of the pre-start state detector is detected based on the given signal
and the detected vehicle state, and

The method of Claim 16, wherein

the pre-start state detector detects the pre-start state based on a door-handle

manipulation switch signal as the given signal, wherein the door-handle manipulation switch signal indicates an operation state of a door-handle of the vehicle.

23. (previously presented) The method of Claim 22,
wherein a state of a door opening/closing switch is detected, and
wherein, when the pre-start state is not detected based on the door-handle switch signal for a given period including a given time at which the door is operated based on the state of the door opening/closing switch, an anomaly of the pre-start state detector is detected.

24. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:
executing warm-up of at least one of the engine and the component;
detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and
detecting an anomaly of the pre-start state detector; and
detecting a vehicle state,
wherein the pre-start state detector detects the pre-start state based on a given signal,
the anomaly of the pre-start state detector is detected based on the given signal

and the detected vehicle state, and

The method of Claim 16, wherein,

when the anomaly of the pre-start state detector continues for more than a given period, the pre-start state detector is diagnosed with an anomaly condition.

25. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;

detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and

detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state, and

The method of Claim 16, wherein

a counter is continuously incremented while the anomaly of the pre-start state detector is being detected, and

when the counter exceeds a given count, the pre-start state detector is diagnosed

with an anomaly condition.

26. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;
detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and
detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state, and

The method of claim 16, wherein

the detected vehicle state is a detection of one or more of the following vehicle parameters being greater than or equal to a given corresponding level: vehicle speed, engine rotation speed, amount of air drawn into the engine, pressure provided in an engine exhaust path, opening degree of an accelerator, opening degree of a throttle, vehicle deceleration and clutch pedal depression.

27. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;

detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and

detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state,

the pre-start state detector detects the pre-start state based on an ON-signal or an OFF-signal of an ignition key insertion switch as the given signal, wherein the ON-signal or OFF-signal of the ignition key insertion switch indicates whether an ignition key is inserted or not, respectively, and

The method of claim 19, wherein

the detected vehicle state is a detection of one or more of the following vehicle parameters being greater than or equal to a given corresponding level: vehicle speed, engine rotation speed, amount of air drawn into the engine, pressure provided in an engine exhaust path, opening degree of an accelerator, opening degree of a throttle,

vehicle deceleration and clutch pedal depression.

28. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;
detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and
detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state,

the pre-start state detector detects the pre-start state based on an ON-signal or an OFF-signal of an ignition key insertion switch as the given signal, wherein the ON-signal or OFF-signal of the ignition key insertion switch indicates whether an ignition key is inserted or not, respectively, and

The method of claim 19, wherein

the detected vehicle state is a detection of a position of the ignition key being positioned at an ON or START position.

29. (currently amended) A method of diagnosing an anomaly in a vehicle having an internal combustion engine and a component having an operative relationship with the engine, the method comprising:

executing warm-up of at least one of the engine and the component;

detecting, with a pre-start state detector, a pre-start state by detecting a preparation operation for a start of the engine, wherein the warm-up is executed prior to the start of the engine when the pre-start state is detected; and

detecting an anomaly of the pre-start state detector; and

detecting a vehicle state,

wherein the pre-start state detector detects the pre-start state based on a given signal,

the anomaly of the pre-start state detector is detected based on the given signal and the detected vehicle state, and

The method of claim 16, wherein

said executing warm-up of at least one of engine and the component comprises executing warm-up of one or more of the following components: air/fuel ratio sensor, suction pipe, catalytic converter, fuel injection valve, and canister for adsorbing vapor fuel vaporized from a fuel tank.